

CLAIMS

1. A crystal of 6-fluoro-1-methyl-7-[4-(5-methyl-2-oxo-1,3-dioxolen-4-yl)-methyl-1-piperazinyl]-4-oxo-4H-
5 [1,3]thiazeto[3,2-a]quinoline-3-carboxylic acid acetonitrile solvate, which has diffraction peaks at least at 7.3°, 14.7°, 19.2° and 22.3° in the powder X-ray diffraction spectrum.

2. The crystal according to Claim 1, which has
10 diffraction peaks at least at 7.3°, 12.6°, 14.7°, 16.5°, 19.2°, 22.3° and 25.8° in the powder X-ray diffraction spectrum.

3. A method for producing a crystal of 6-fluoro-1-methyl-7-[4-(5-methyl-2-oxo-1,3-dioxolen-4-yl)-methyl-1-
15 piperazinyl]-4-oxo-4H-[1,3]thiazeto[3,2-a]quinoline-3-carboxylic acid acetonitrile solvate, which comprises performing crystallization from an acetonitrile solution of 6-fluoro-1-methyl-7-[4-(5-methyl-2-oxo-1,3-dioxolen-4-yl)-methyl-1-piperazinyl]-4-oxo-4H-[1,3]thiazeto[3,2-
20 a]quinoline-3-carboxylic acid by controlling its supersaturation concentration (g/100 g) to be from 2.15 to 2.36 at the time of occurrence of spontaneous nucleus.

4. A method for producing a crystal of 6-fluoro-1-methyl-7-[4-(5-methyl-2-oxo-1,3-dioxolen-4-yl)-methyl-1-
25 piperazinyl]-4-oxo-4H-[1,3]thiazeto[3,2-a]quinoline-3-carboxylic acid acetonitrile solvate, which comprises

performing crystallization from an acetonitrile solution of
6-fluoro-1-methyl-7-[4-(5-methyl-2-oxo-1,3-dioxolen-4-yl)-
methyl-1-piperazinyl]-4-oxo-4H-[1,3]thiazeto[3,2-
a]quinoline-3-carboxylic acid by controlling its
5 supersaturation concentration (g/100 g) to be from 0.41 to
2.36 at the time of addition of a seed crystal.

5. The method according to Claim 4, wherein the
solution at the time of addition of the seed crystal has a
temperature of 70°C or lower.

10 6. A method for producing the type III crystal of 6-
fluoro-1-methyl-7-[4-(5-methyl-2-oxo-1,3-dioxolen-4-yl)-
methyl-1-piperazinyl]-4-oxo-4H-[1,3]thiazeto[3,2-
a]quinoline-3-carboxylic acid, which comprises desolvating
a crystal of 6-fluoro-1-methyl-7-[4-(5-methyl-2-oxo-1,3-
15 dioxolen-4-yl)-methyl-1-piperazinyl]-4-oxo-4H-
[1,3]thiazeto[3,2-a]quinoline-3-carboxylic acid
acetonitrile solvate.